

**In the Claims**

Please replace all prior versions, and listings, of claims in the application with the following list of claims:

1. (original) A fusion protein comprising an interferon-alpha (IFN- $\alpha$ ) molecule joined at its C terminal end through a peptide linker to an N terminal end of an immunoglobulin heavy chain comprising a hinge, C<sub>H</sub>2, and C<sub>H</sub>3 domain, wherein the linker has a sequence chosen from Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser (GS10; SEQ ID NO:28), Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser (GS15; SEQ ID NO:29), and Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser (GS20; SEQ ID NO:30).
2. (original) The fusion protein of claim 1, wherein the IFN- $\alpha$  is IFN- $\alpha$ 2b.
3. (original) The fusion protein of claim 1, wherein the IFN- $\alpha$  is a consensus IFN.
4. (original) The fusion protein of claim 1, wherein the immunoglobulin heavy chain is a human Fc $\gamma$ 1 heavy chain.
5. (original) The fusion protein of claim 1, wherein the immunoglobulin heavy chain has an amino acid sequence provided by SEQ ID NO:2.
6. (original) The fusion protein of claim 1, wherein the IFN- $\alpha$  is IFN- $\alpha$ 2b and the immunoglobulin heavy chain is a human Fc $\gamma$ 1 heavy chain.
7. (original) The fusion protein of claim 1, wherein the linker has a sequence Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser (GS10; SEQ ID NO:28).
8. (original) The fusion protein of claim 1, wherein the linker has a sequence Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser (GS15; SEQ ID NO:29).

9. (original) The fusion protein of claim 1, wherein the linker has a sequence Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Ser (GS20; SEQ ID NO:30).

10. (original) The fusion protein of claim 1, wherein the fusion protein is a disulfide-linked homodimer.

11. (original) A fusion protein comprising an interferon-alpha 2b (IFN- $\alpha$ 2b) molecule joined at its C terminal end through a peptide linker to an N terminal end of a human Fc $\gamma$ 1 heavy chain comprising a hinge, C<sub>H</sub>2, and C<sub>H</sub>3 domain, wherein the linker has a sequence Gly-Gly-Gly-Gly-Ser-Gly-Gly-Gly-Gly-Ser (GS15; SEQ ID NO:29).

12. (previously presented) The fusion protein of claim 11, wherein the fusion protein is a disulfide-linked homodimer.

13. (currently amended) A method for systemic delivery of interferon-alpha (IFN- $\alpha$ ), comprising:

administering an effective amount of an aerosol of a the fusion protein of claim 1 to lung such that a central lung zone/peripheral lung zone deposition ratio (C/P ratio) is at least 0.7.

Claims 14-17 (canceled)

18. (currently amended) A method for systemic delivery of interferon-alpha 2b (IFN- $\alpha$ 2b), comprising:

administering an effective amount of an aerosol of a the fusion protein of claim 11 to lung such that a central lung zone/peripheral lung zone deposition ratio (C/P ratio) is at least 0.7.

Claims 19-22 (canceled)

23. (currently amended) A method for systemic delivery of interferon-alpha (IFN- $\alpha$ ), comprising:

administering an effective amount of an aerosol of a the fusion protein of claim 1 to lung, wherein particles in the aerosol have a mass median aerodynamic diameter (MMAD) of at least 3 micrometers ( $\mu\text{m}$ ).

Claims 24-27 (canceled)

28. (currently amended) A method for systemic delivery of interferon-alpha 2b (IFN- $\alpha$ 2b), comprising:

administering an effective amount of an aerosol of a the fusion protein of claim 11 to lung, wherein particles in the aerosol have a mass median aerodynamic diameter (MMAD) of at least 3 micrometers ( $\mu\text{m}$ ).

Claims 29-32 (canceled)

33. (currently amended) An aerosol delivery system, comprising a container, an aerosol generator connected to the container, and a the fusion protein of claim 1 disposed within the container, wherein the aerosol generator is constructed and arranged to generate an aerosol of the fusion protein having particles with a MMAD of at least 3  $\mu\text{m}$ .

Claims 34-39 (canceled)

40. (currently amended) An aerosol delivery system, comprising a container, an aerosol generator connected to the container, and a the fusion protein of claim 11 disposed within the container, wherein the aerosol generator is constructed and arranged to generate an aerosol of the fusion protein having particles with a MMAD of at least 3  $\mu\text{m}$ .

Claims 41-46 (canceled)

47. (currently amended) A method of treating an interferon-alpha (IFN- $\alpha$ )-sensitive disease in a subject, comprising

administering to a the subject having an IFN- $\alpha$ -sensitive disease an aerosol of the fusion protein of claim 1, in an effective amount to treat the IFN- $\alpha$ -sensitive disease.

Claim 48 (canceled)

49. (currently amended) A method of treating an interferon-alpha 2b (IFN- $\alpha$ 2b)-sensitive disease in a subject, comprising

administering to a the subject having an IFN- $\alpha$ 2b-sensitive disease an aerosol of the fusion protein of claim 11, in an effective amount to treat the IFN- $\alpha$ 2b-sensitive disease.

Claim 50 (canceled)